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AN ANIMAL WEATHER BUREAU

The loci classici for weather lore in Latin are to be found in Vergil, in the First Book of the Georgics. Since commentators have not seen fit to quote parallel passages or to comment at length upon these passages in Vergil, there seems to be need of a comparative treatment of ancient weather signs derived from animals. This article may be regarded as a sort of postscript to the work of Royds, who in his book, *The Beasts, Birds and Bees of Virgil* (Blackwell, Oxford, 1914), shows no special interest in such prognostics.

As is the case with us, the ancients found a foreknowledge of weather conditions not only convenient, but profitable. In lieu of government prognostications they consulted, among other things, the animal weather bureau. We are informed by Pliny, N. H. 8.102, that nature has bestowed upon many animals¹ the faculty of observing the heavens, and of presaging the winds, rain, and tempests.

In comparing the relative ability of men and animals in prognosticating the weather, Aelian, *De Natura Animalium* 7.8, says that in all respects man is inferior and does not know of the changes before they occur. We find even Cicero, *De Divinatione* 1.15, writing as follows: *Inest in ranunculis vis et natura quaedam significans aliquid per se, ipsa satis certa, cognitioni autem hominum obscurior.* Aelian thinks that animals do not receive enough credit for their weather knowledge. He says that it arouses no admiration when an ox, by resting on its right side, serves notice that a storm is about to break, or when, by turning over to its left side, it shows that clear weather has come again. When, however, while it is still clear, a man appears in the theater or at the games clad for bad weather, it is a cause for astonishment, and all think that he is endowed with some divine intelligence.

Dogs, oxen, pigs, goats, serpents, and other animals know when a famine is approaching, and they are the first to detect the signs of a pestilence or of an earthquake. They know in advance when conditions are going to be salubrious and when there are going to be good crops. In these things they do not err, says Aelian, 6.16. Aristophanes, *Aves* 717-719, makes the birds say that, whatever man does, he first looks to them and their flying.

To animals was attributed even the power of speech. Achilles's horse talked with his master. Democritus went so far as to give some preparations from snakes

which would enable one to understand the language of birds (Pliny, N. H. 29.72).

It is but natural to suppose that the peasantry and the seafarers are more responsible for weather lore than are city dwellers. Agricultural and fishing communities are obviously more interested in weather conditions, and, in addition, have more opportunity for making observations in the animal world. As the presence or the absence of rain and storm has a very vital relation to the welfare of such persons, one is not surprised that a considerable body of rain lore grew up.

RAIN AND STORM

Numquam imprudentibus imber obfuit.

So many are the signs of storm upon both land and sea that no one with eyes and ears open need be taken unawares, as we learn from Georgics 1.373-374. In 374-389 Vergil continues as follows:

For while 'tis brewing, cranes of lofty wing
Retreat to lowland vales; the heifer scans
The sky above and snuffs the passing breeze
With nostrils wide; the swallow with shrill cry
Flits round the pond, and from the marsh ooze
The frogs in choir their age-long trouble sing;
Often the ant from out her secret cells
Bores her straight path and brings her eggs to air;
A spacious rainbow drinks the rain; the crows²
Their camp abandon and in martial line
Depart, with clashing of unnumbered wings;
Sea-birds of many a tribe, that haunt the fens
Of Asia and Cayster's waters fair,
Eagerly splash their backs with showers of spray,
Dive head down in the stream, and race along
The rippling surface, while unrestingly
They plunge with fury in the needless bath.
With lifted voice the loud insulting crow
Invokes the rain, and o'er some sandy marge
Circles alone³.

Vergil's reference to the cranes reminds one of the cranes in *Iliad* 3.4-5, which 'flee the winter and the unspeakable storm and make for the streams of Ocean'.

If cranes fly early and in flocks, a storm is imminent; but, if they fly late and for a long time, the storm will come late. If they wheel about in their flight, they indicate stormy weather⁴ (Th. 38)⁵. Their cries, too,

¹"It is surprising that an author so observant as Virgil and so intimately acquainted with the habits of animals, should distinctly use *cornix* for raven, and *corvus* for rook": Wedgwood, *Transactions of the Philological Society* (1854), 108. See Royds, 40 f.

²I use the translation by T. C. Williams (for this see *THE CLASSICAL WEEKLY* 10.183-184).

³Hort translates, "it will be an early winter", justifying his translation by Aratus, *De Signis* 343 f. The paragraph containing these words lists, however, only signs of storms. The present writer does not believe that Aratus supports Hort's translation. In a number of other places the writer is under obligation to Hort's careful translation of Theophrastus.

⁴The abbreviations are to be interpreted as follows: Th. =

¹Throughout this paper the word *animal* is used in the Latin sense.

summon rain (Ael. 1.44; compare Aen. 10.265). A heavy storm is brewing when they make from the sea to the land and fly in confusion (Ael. 7.7), or with loud cries search for food (Ar. 1021-1022). Aristotle, *Historia Animalium* 9.11, says that these birds fly high in order to have a wide prospect, and that, if they see clouds and storms coming, they descend and keep quiet⁶.

We are informed that it is a sign of rain when the swallow flies low and skims along the surface of the water near enough to ripple it every now and then with its wings or breast (Th. 15)⁷. The actions of the swallow are still considered a good indication of the weather, since it flies low only when hygrometric conditions prevent insects from going aloft. The swallow then descends for its prey⁸.

The raven is called by Horace, Carm. 3.27.10, *imbrium divina avis imminetum*.

It is a sign of rain if the raven, who is accustomed to make many different sounds, repeats one of these quickly and makes a whirring sound and shakes his wings. So too if, during a rainy season, he utters many different sounds, or if he searches for lice perched in an olive-tree. And if, whether in fair or wet weather, he imitates, as it were, with his voice falling drops, it is a sign of rain⁹.

It means the same thing when the raven flies high and screams like a hawk, or if, in fair weather, he does not utter his accustomed note (Th. 16); also when he calls late (Th. 39; compare Plutarch, *Moralia* 129 A). One can look for rain if ravens appear in flocks and shriek like hawks, or if they caw twice very loudly and flap their thick-feathered wings (Ar. 963-969). When the raven utters a great variety of sounds in winter, it is a herald of storm (Th. 40)¹⁰.

The *cornix*, or crow proper¹¹, predicts storm by cawing twice and then a third time, as well as by cawing late in the day (Th. 39; compare Ael. 7.7), or at night (Ar.

1022-1023). By descending with cries to the water and sprinkling itself, it may indicate the same thing (Pl. 18.363). One of this bird's epithets is *ὕερθναρις*, 'rain-seer' (Euphorion, Frag. 65). Horace's *aquae augur* (Carm. 3.17.13) seems like a literary echo. At times the cry of both raven and crow may mean wind as well as rain (Lucretius 5.1083-1086)¹²:

Et partim mutant cum tempestatibus una
raucisonos cantus, cornicum ut saccla vetusta
corvorumque greges, ubi aquam dicuntur et imbris
poscere et interdum ventos aurasque vocare¹³.

Theophrastus makes several statements about the finch. When it sings at dawn, it indicates storm or rain (Th. 23; compare Ar. 1023), but in the afternoon, rain (23). Singing in an inhabited dwelling, it preludes a storm (40). When a finch kept in a dwelling cries at dawn, it portends either a rain or a storm (19)¹⁴. The sparrow as well as the finch indicates storm by chirping at dawn (39).

Jackdaws have a great deal to say about the weather. They indicate a storm when they fly from the south (Th. 40), or when they cry late in the day (Th. 39; compare Ar. 1023). It means rain when they fly upwards and scream like hawks (Th. 16); when they appear in flocks and scream like hawks (Ar. 965-966); when they flap their wings under the eaves of a house (Ar. 970-971); when they cry late in the evening (Ael. 7.7); or when, as is the case with cocks, they shake out their wings over a pond or the sea in the manner of a duck (Th. 18). Storms are portended when they return late from their feeding (Pl. 18.363), or when they leave their feeding to return to their roosts (Ar. 1026-1027). When they fly, sometimes high, sometimes low, and scream like a hawk, it is an omen of frost as well as of rain (Ael. 7.7). Ovid, *Amores* 2.6.34, speaks of the jackdaw as *pluviae graculus auctor aquae*.

Rain will follow when a hawk perched on a tree flies farther within it and picks lice from itself (Th. 17)¹⁵, or

Theophrastus, *De Signis*; Ar. = Aratus, *Phaenomena*, to the end of which is generally added his *De Signis*; Ael. = Aelianus, *De Natura Animalium*; Pl. = Plinius, *Naturalis Historia*. I have not deemed it worth while to encumber this article by frequent reference to Avienus's translation of the *De Signis* of Aratus, or to the *Geoponica*. Thompson = D'Arcy Wentworth Thompson, *A Glossary of Greek Birds*. I am much indebted to this wonderful collection of material. I am indebted to a smaller degree to the delightful book by Professor E. W. Martin, *The Birds of the Latin Poets* (see *THE CLASSICAL WEEKLY* 10.143-144). Abbott = C. A. Abbott, *Animal Weather Lore in America*, *Popular Science Monthly* 28.635-643; Dunwoody = H. A. C. Dunwoody, *Weather Proverbs*, *Signal Service Notes*, No. 1X; Dyer = Dyer, *English Folk-Lore*² (1880); Fogel = E. M. Fogel, *Beliefs and Superstitions of the Pennsylvania Germans*, *Americana Germanica* 18. 221-241; Inwards = R. Inwards, *Weather Lore*; Owen = E. Owen, *Welsh Folk-Lore* (1896).

⁶"When the crane flies against the stream, she asks for rain; when with the stream, she asks for fair weather"; Owen, 321.—"If a crane flies southeast, a rainstorm is near; if northwest, fine weather"; *Journal of American Folk-Lore* 31.8.

⁷Compare Ar. 944-945; Pl. 18.363; Varro *Atacinus ap. Servium* in *Georgica* 1.375.

⁸For the same reason, presumably, fish jumping out of the water are supposed to give warning of storm. See Dunwoody, 50.

⁹Th. 16, as translated by Hort. See Ar. 966-967, and compare 'The raven wishes to imitate drops of rain' (Ael. 6.19).

¹⁰Compare also Ael. 7.7; Nicander, *Theriaca* 406, and the scholiast there; Pl. 18.362; Dracontius, *Laudes Dei* 1.527.

¹¹I translate *cornix* by 'crow' and *cornus* by 'raven', without presuming to straighten out the ancient tangle.

¹²For other references to the crow, see *Thesaurus Linguae Latinae*, s. v. *cornix*, B. 2.

¹³"Ravens and crows, when they do make a hoarse, hollow and sorrowful noise, as if they sobbed, it presages foul weather approaching. Crows flocking together in great companies or calling early in the morning with a full and clear voice, or at any time of the day gaping against the sun, foreshews hot and dry weather; but if at the brink of ponds they do wet their heads, or stalk into the water, or cry much towards the evening, are signs of rain"; Willsford's *Nature Secrets*, 133.—"When it <the crow> makes a hoarse hollow noise, it presages foul weather"; Dyer, 81.—In Devonshire lore, when crows fly low, it is a sign of rain. When rooks or crows stay at home or return early in the day, rain should be expected; if they fly far away, it will be fair. In Greece, too, ravens bring the summer rain. See Walker, *Bird Legend and Lore*, 223, 226.—Compare also Hosmer's verses:

Warned is the reaper of foul weather nigh,
When the prophetic creature, in its flight,
With changed note in its discordant cry,
Moves like a gliding kite.
While louder grows that wild presageful call,
Sheaves are piled high upon the harvest main,
And the stack neatly rounded ere the fall
Of hail and driving rain.

¹⁴"In Scotland and the north of England, the plaintive note of the chaffinch . . . is interpreted as a sign of rain. When, therefore, the boys hear it, they first imitate it, and then rhymingly refer to the expected consequences:—'Weet; Weet!—Dreep, dreep!'" Dyer, 86.

¹⁵Compare Abbott, 206:

The hen-hawk's scream at hot high noon
Foretells a coming shower soon.

when the robin and the wren seek shelter (Th. 39)¹⁶. If in winter sparrows begin to be clamorous at evening, it is a sign of a change of wind or of rain (Th. 28). If the kite flies continually, the shepherd should take with him some protection against the rain (Varro ap. Nonium 179.1)¹⁷. Storms will follow the hooting of the owl in clear weather (Ael. 7.7), or the cry of a solitary *δολυγών*¹⁸ at early dawn (Th. 42; Ar. 948). Servius in Georgica 1.401 makes significant the hooting of the owl after sunset. So too in contemporary weather lore the owl's cry at night betokens a change of weather¹⁹.

The cuckoo's reputation as a rain-seer was already well established in the time of Hesiod (Opera et Dies 486-490)²⁰. Miss Jane Harrison would date the weather knowledge of the cuckoo as far back as Minoan times, for she identifies as a cuckoo the bird on the well-known sarcophagus from Hagia Triada (see Themis, 177) and says (179) that it "is summoned to bring new life to the tree, dead in the winter, to bring the rain that will bring the food-fruits".

The woodpecker, too, was a *pluvia avis*²¹. As a rain-maker it has been discussed rather fully by Rendel Harris, *Picus Who Is also Zeus*, 37-47.

The appearance of a white sparrow or swallow or of a white bird of any species that is usually black is a prelude to a storm, just as black ones in great numbers indicate rain (Th. 39). It is a rain sign when large numbers of white birds make their appearance (Ael. 7.7). There is a species of 'white birds' which give notice of stormy weather when they descend to the water and besprinkle themselves (Pl. 18.363). If 'white birds' come near to farms, they portend showers or storm (Th. 47).

¹⁶Compare Ar. 1025-1026; Ael. 7.7.

¹⁷"Kites flying unusually high are said to indicate fair weather": Dunwoody, 37.

¹⁸The scholiast on Aratus 948 says that this is a bird, but that it is sometimes taken as a tree-frog. See note 53.

¹⁹Walker, *Bird Legend and Lore*, 205. Among the Pennsylvania Germans, "If owls hoot from the hills, it indicates clear weather; if from pine trees, disagreeable weather": Fogel, 224.—"If owls hoot at night-fall or after daybreak, it indicates bad weather": Fogel, 225.—"The hooting of owls at dusk indicates rain": Fogel, 225.

²⁰Compare the last two stanzas of a four-stanza poem on The Rain-Crow, by Madison Cawein (Stedman, *An American Anthology*, pp. 708-709):

But thou art right. Thou prophesiest true.
For hardly hast thou ceased thy forecasting.
When, up the western fierceness of scorched blue,
Great water-carrier winds their buckets bring
Brimming with freshness. How their dippers ring
And flash and rumble! lavishing dark dew
On corn and forestland, that, streaming wet,
Their hilly backs against the downpour set
Like giants vague in view.

The butterfly, safe under leaf and flower,
Has found a roof, knowing how true thou art;
The bumble-bee, within the last half-hour,
Has ceased to hug the honey to his heart;
While in the barnyard, under shed and cart,
Brood-hens have housed. But I, who scorned thy power,
Barometer of the birds,—like August there,—
Beneath a beech, dripping from foot to hair,
Like some drenched truant, cower.

²¹"The woodpecker, from its vociferous cry when rain is impending, has been popularly called 'the rain-bird'; and in many country districts it is held in no small estimation from its prognosticating wet; and Wallis, in his History of Northumberland, tells us that it is called in that country by the common people 'rain-fowl'. Both these terms are analogous to the *pluvia aves* of the Romans, who for the same reason gave them this designation": Dyer, 90. I have been unable to run down the ancient source for the statement about the *pluvia aves*.

Bad weather will follow when birds that dwell in trees hide themselves in their nests (Pl. 18.363); when birds which are not aquatic wash themselves (Th. 15); or when, during the summer, birds that live on islands appear in flocks on the mainland²² (Th. 17; compare Ar. 981-982).

Marsh and sea birds anticipate changes as readily as do land birds. The heron crying early in the morning indicates either rain or wind, but, if it cries as it makes for the sea, it is an indication of rain rather than of wind (Th. 18). In general a loud cry means wind (Th. 18)²³. Several writers state that, on the approach of a storm, the heron seeks the upper regions of the air²⁴, but Pliny (18.363) says that it stands melancholy on the sands. Aelian (7.7) tells us that there will be a storm when the heron cries early in the morning; when it sets out straight to the sea, there will be rain²⁵.

Similar to Vergil's lines on the *cornix* (Georgics 1.388-389) is a passage in Claudianus, *De Bello Gildonico*, 492-493: *Heu nimium segnes, cauta qui mente notatis, si revolant mergi, graditur si litore cornix*. Apropos of such statements Thompson, *A Glossary of Greek Birds*, 100, writes: "It is at least pretty clear that in such passages the Latin poets were thinking more of what they had read than of what they had seen". He thinks that the Romans imitate Greek descriptions of the *κορώνη ἢ θαλάσσιος*. He suggests 'cormorant' for this bird, but more recently has identified it as the little shearwater²⁶.

It is a sign of rain when this bird puts back its head on a rock which is washed by waves, or when it dives or hovers over the water (Th. 16; compare Geoponica 1.3.6). Aratus (949-953) tells how the *κορώνη*, when a storm is approaching, seeks refuge on a headland along the coast, or somewhere along a river dips its head, or even its whole body, in the water, or walks along the water's edge shrieking loudly²⁷. The cry of the 'sea-owl' during fine weather is a sign of storm (Th. 52).

One may include under Vergil's water birds wild ducks and *αἰθυαί*²⁸. When they are seen flapping their wings on land, rain is looked for (Th. 28; compare Ar. 918-919)²⁹. Birds are not unaware of an approaching

²²That this is the meaning is proved by Ar. 1094-1100.

²³Compare Ar. 972; Cicero, *De Divinatione* 1.14. Cicero here translates the *ἐρωδιός* of Aratus by *fulix*.

²⁴Lucan, *Pharsalia* 5.554-555; Seneca, *Naturales Quaestiones* 7.28.1; Isidorus, *Origines* 12.7.21.

²⁵"When he <the great heron> leaves the seacoast, and traces on wing the courses of the creeks or rivers upwards, he is said to prognosticate rain; when downwards, dry weather": Alexander Wilson, *The Foresters*.—"The heron as it flies towards the source of a river is said to be going up the river to bring the water down, in other words, it is a sign of coming rain": Owen, 323 (Welsh lore).

²⁶The Classical Review 32.96.

²⁷Compare Lucan, *Pharsalia* 5.556.

²⁸In his Glossary, Thompson suggests 'gull' as the identification of this bird, but see his note in *The Classical Review* 32.95.

²⁹Compare Dyer, 100: "When they <sea-gulls> appear in the fields, a storm from the southeast generally follows: and when the storm begins to abate, they fly back to the shore". They are sometimes called 'sea-mews', and it is said that early in the morning, when they make a gaggling more than ordinary, they prognosticate stormy weather. In Scotland the following rhyme is prevalent:

'Sea-gull, sea-gull, sit on the sand,

It's never good weather when you're on the land'."

"It is believed that when sea-gulls leave the sea for the mountains, it is a sign of stormy weather": Owen, 329 (Welsh lore).—"When ducks sportively chase each other through the water, and flap their

storm if they gather about marshes or the banks of rivers (Ael. 7.7); or if they fight for their food more than usual (Th. 41).

When sea or marsh birds plunge violently into the water, they are taking their final dip prior to the advent of a storm (Ar. 942-943; Cicero, *De Divinatione* 1.14)³⁰. Divers make for the land in anticipation of a storm (Lucan, *Pharsalia* 5.553; compare Callimachus, *Frag.* 167). It is in general an indication of storm when birds flee the sea (Th. 40; Ar. 1024-1025; Ael. 7.7).

Insects, too, are susceptible to weather conditions. 'It is a sign of rain if ants in a hollow place carry their eggs up from an ant-hill to the high ground; a sign of fair weather if they carry them down' (Th. 22)³¹. Vergil's *extulit ova* repeats the faulty observations of the Greeks, since it is pupae or chrysalises that the ant transports, and she carries them in rather than out. Apropos of Vergil's statement, Burroughs, *Signs and Seasons*, 7, makes the following comment:

I am told that one of the most reliable weather signs they have down in Texas is afforded by the ants. The ants bring their eggs up out of the underground retreats and expose them to the warmth of the sun to be hatched. When they are seen carrying them in again in great haste, though there be not a cloud in the sky, your walk or your drive must be postponed; a storm is at hand.

Apparently the ancient notion was that the ants carried out the 'eggs' to save them from the inundation of underground passages³².

We are told by Aristotle, *Historia Animalium* 9.27.25, that bees discern the approach of cold weather and of rain. Proof of this is the fact that they will not leave the vicinity of the hive³³, but, even if the day is apparently clear, keep busy around it. By this bee-keepers know when severe weather is expected. Such statements are frequently made³⁴. It is a sign of showers and great storms when there are many wasps in the autumn (Th. 47; compare Ar. 1064-1067).

According to a common saying, when flies bite vigorously, it is a sign of rain (Th. 23; Ar. 973-975)³⁵. The same thing is indicated when many millipeds are seen crawling up a wall (Th. 19; compare Ar. 957-958). Spiders do not spin on a clear day; hence a great number of cobwebs is a sure sign of showery weather (Pl. 11.84; compare Ar. 1033). Most people who believe in

spider signs to-day leave their umbrellas at home when they see cobwebs in profusion³⁶.

Many of the farm animals are weather wise. Vergil mentions the *bucula*. In addition to sniffing with nose to the sky and lowing³⁷, oxen indicate rain by licking themselves the wrong way³⁸ (Pl. 18.364; Ael. 7.8); and either rain or storm by licking their forefeet (Th. 15; Ar. 1114-1115). A rain storm is going to follow when with much lowing oxen reluctantly leave their pasture (Ar. 1118-1121); when they tear up the ground in late summer (Ar. 1082-1087); when a team of them is friskier than usual and lows and kicks up the dust (Ael. 7.8); when they eat more than usual or lie on their right side³⁹ (Ar. 1116; Ael. 7.8; Th. 54). Theophrastus (41) makes the last statement broad enough to include cattle in general.

It is an omen of storm when sheep skip and frisk in gambols⁴⁰ (Ar. 1104-1112; Pl. 18.364); when they tear up the ground with their feet (Ael. 7.8; compare Ar. 1082-1087); or fight for their food more than usual (Th. 41)^{40a}. Before a storm swine tear to pieces trusses of hay put out for other animals⁴¹ (Pl. 18.364) and roll about in the mud (Ar. 1123; Plutarch, *Moralia* 129 A). When pigs appear in ploughed fields, it is a signal to seek cover (Ael. 7.8.) In Libya goats reveal their anticipation of

³⁶Not all people agree, however, as to what large numbers of cobwebs mean. "When you see the ground covered with spider webs which are wet with dew, and there is no dew on the ground, it is a sign of rain before night, for the spiders are putting up umbrellas; but others say when the spiders put out their sunshades, it will be a very hot day": Dunwoody, 58.

Inwards, 147, says: "Before rain or wind spiders fix their frame-lines unusually short. If they make them very long, the weather will usually be fine for fourteen days"; "If the spiders are totally indolent, rain generally soon follows"; "Spiders, when they are seen crawling on the walls more than usually, indicate that rain will probably ensue. This prognostic seldom fails, particularly in winter"; "If spiders break off and renew their webs, the weather will be wet".

³⁷See Ar. 954-955; Cicero, *De Divinatione* 1.13; Varro *Atacinus* ap. Servium in *Georgica* 1.375.

³⁸The same belief obtains to-day. My uncle informs me that cows lick themselves against the hair in order that the coming rain may wash the dirt out.

³⁹"When cows bellow in the evening, expect snow that night". "There are other sayings about cows—such as, if they stop and shake their feet, or refuse to go to pasture in the morning, or when they low and gaze at the sky, or lick their forefeet, or lie on the right side, or rub themselves against posts, or lie down early in the day, it indicates rain to come": Inwards, 128. See also Abbott, 636:

When a cow tries to scratch its ear,
It means a shower is very near;
When it thumps its ribs with its tail,
Look out for thunder, lightning, hail.

⁴⁰In this case the severity of the storm is commensurate with the vigor of their action.

^{40a}"Welsh sheep become infallible prognosticators of a change of weather; for by a never failing instinct, they leave the high and bare mountain ridges for sheltered nooks, and crowd together when they detect the approach of storm": Owen, 308.

Compare a story told by E. T. Seton, *Wild Animals I Have Known*, 280: "The journey through Northumberland was uneventful. At the river Tyne the sheep were driven on to the ferry and landed safely in smoky South Shields. The great factory chimneys were just starting up for the day and belching out fog-banks and thunder-rollers of opaque leaden smoke that darkened the air and hung low like a storm cloud over the streets. The sheep thought that they recognized the fuming dun of an unusually heavy cheviot storm. They became alarmed and in spite of their keepers stampeded through the town in 371 different directions".

⁴¹"In Ireland, to see pigs running about the farmyard with straws in their mouth, foretells an approaching storm": Dyer, 116.—"If hogs run about with pieces of wood in their mouths, it foretells a storm": Fogel, 235 (*Pennsylvania German* lore).—"Hogs crying and running unquietly up and down with hay or litter in their mouths foreshadow a storm to be near at hand": "When pigs carry straw to their sties, bad weather may be expected": Inwards, 130.

wings and dive about in evident enjoyment of their pastime, it is a sign that rain is not far off": Owen, 321.

³⁰Compare also Seneca, *Naturales Quaestiones* 7.28.1.

³¹Compare Ar. 954-955; Plutarch, *Moralia* 967 F; Pl. 18.364; Varro *Atacinus* ap. Servium in *Georgica* 1.375.

³²Perhaps then, there is no inconsistency. It will be noted that Theophrastus speaks of 'ants in a hollow place'. Ants so imprudent as to make nests in exposed positions might well carry out eggs and food prior to the inundation of their homes. Compare "When ants are situated in low ground, their migration may be taken as an indication of approaching heavy rains": Dunwoody, 55.

³³This does not agree with Burroughs's observations, which will be quoted later.

³⁴Ael. 1.11; Pl. 11.26. Compare also Ael. 5.13; Th. 46; Pl. 18.364.

³⁵Compare Dunwoody, 56: "When flies bite greedily, expect rain"; "When flies congregate in swarms, rain follows soon";

"A fly on your nose you slap and it goes;

If it comes back again, it will bring a good rain".

³⁶If flies cling much to the ceilings, or disappear, rain may be expected": Inwards, 148. The flea, too, when greedy for blood, points to rain. See Inwards, 148.

rain by running from the stables, eagerly devouring pasture, and returning to the stables to be tended by the herdsman, or by huddling together⁴² (Ael. 7. 8)⁴³. Prior to a storm they browse eagerly on the twigs of the ilex tree (Ar. 1122-1123). An ass shaking its ears indicates storm (Th. 41)⁴⁴. So does a bitch scratching up the ground with its paws (Th. 42; Ar. 1135-1136)⁴⁵.

It is a portent of storm when cocks and other domestic fowls utter their cries in a low tone (Ael. 7.7)⁴⁶; when cocks and hens pick lice from themselves and when they make a noise like that of falling rain (Th. 17; compare Ar. 960-961). The cock does not crow when the air is already heavily saturated with moisture (Ael. 3.38)⁴⁷.

It is a sign of heavy storm when geese fall upon their food with much cackling, or fight for it (Th. 39)⁴⁸; or when they set up a continuous cackling at an unusual time (Pl. 18.363). If a tame duck under the eaves shakes out its wings, it indicates rain (Th. 18; Ar. 970-971); likewise if, in the manner of a duck, jackdaws and cocks shake out their wings over a pond or the sea (Th. 18). Divers and ducks, both wild and tame, proclaim rain by diving (Th. 28).

If weasels and mice squeak softly, there will be a heavy storm (Ael. 7.8). Prior to a storm mice dance about as well as squeak (Th. 41; Ar. 1132-1134, 1139-

1141); they also fight for chaff and carry it away, as it is everywhere commonly reported (Th. 49).

If the lizard known as the salamander is seen, it means rain (Th. 15). The appearance of many earthworms indicates a storm (Th. 42; Ar. 958-959; Pl. 18.364)⁴⁹. If a lone wolf howls near farms, there will be a storm within three days (Th. 46; Ar. 1124-1128). When wild animals approach a farm, it is in general a sign of northerly winds and a violent storm (Th. 47).

The frog croaking more than usual is a harbinger of rain (Ael. 9.13)⁵⁰. Cicero (Ad Att. 15.16b) writes in playful vein: *pluvias metuo, ranae enim βηροπελουσιν*. In the Greek Anthology the frog is called *ὕληρος δαιδός*⁵¹. Plutarch, *Naturales Quaestiones*, 2, ad finem, says that rain water is sweeter and milder than ordinary water, and that in expectation of it frogs raise their voice as if they are calling for rain to sweeten the marsh and to be sauce for water in the pools⁵². The toad washing and frog croaking more than usual betoken rain, and so, too, does the green-frog croaking in a tree (Th. 15). When a (tree-) frog⁵³ croaks by itself at daybreak, it is a sign of storm (Th. 42).

(To be concluded)

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REVIEW

Seneca. By Francis Holland. London and New York: Longmans, Green and Co. (1920). Pp. vii + 205.

This book is an account of the life of Lucius Annaeus Seneca, chronologically told, with a final chapter on Seneca's philosophy and its human appeal. It was originally intended to serve as an introduction to a translation of the Letters of Seneca which Mr. Holland has largely completed, but will not publish—a decision which we must regret. There is also appended an essay of fifteen pages on Maecenas, published previously in the Dublin Review, of which the *raison d'être* is the opinion of Seneca regarding the life and the style of Augustus's prime minister, and a certain parallel between their relationship and that of Seneca with the imperial court. The latter also contains a happy

⁴²"The goat will utter her peculiar cry before rain".—"Goats leave the high grounds and seek shelter before a storm" (Scotland). "If goats and sheep quit their pastures with reluctance, it will rain the next day".—"If old sheep turn their backs toward the wind, and remain so for some time, wet and windy weather is coming": Inwards, 120.

⁴³When sheep, pigs, and goats go eagerly to the male, there will be a storm (Ar. 1068-1074).

⁴⁴"If asses hang their ears downward and forward, and rub against walls, rain is approaching". "If asses bray more frequently than usual, it foreshadows rain": Inwards, 127. The reaction of horses may be more significant. "Black, lumpy clouds came up from the far-off sea; the dust went whirling in little eddies, and when the sun went down, it was of a sickly yellowish. The horses were uneasy, snorting softly, and pricking their ears in a nervous way": E. T. Seton, *Wild Animals at Home*, 102.

⁴⁵"The unusual howling of dogs portends a rain". "Dogs making holes in the ground, howling when any one goes out, eating grass in the morning, or refusing meat, are said to indicate coming rain". "If dogs roll on the ground and scratch, or become drowsy and stupid, it is a sign of rain": Inwards, 126.

Brewer, *Dictionary of Phrase and Fable*, s. v. Rain, explains what is meant by a rain of cats and dogs: "In northern mythology the cat is supposed to have great influence on the weather, and English sailors still say, 'The cat has a gale of wind in her tail', when she is unusually frisky. Witches that rode upon the storms were said to assume the form of cats; and the stormy northwest wind is called the *cat's-nose* at the present day. The dog is a signal of wind, like the wolf, both which animals were attendants of Odin, the storm-god. In old German pictures the wind is figured as the head of a dog or wolf, from which blasts issue. The *cat* therefore symbolises the down-pouring rain, and the *dog* the strong gusts of wind which accompany a rain-storm; and a 'rain of cats and dogs' is a heavy rain with wind".

⁴⁶Compare Ar. 960; Plutarch, *Moralia* 129 A; *Geoponica* 1.3.8.

⁴⁷"If the cock crows on going to bed, He's sure to rise with a watery head".

"In the midland counties <of England> it is said that

If the cock moults before the hen,
We shall have the weather thick and thin;
If the hen moults before the cock,
We shall have weather as hard as a block'.

In Derbyshire, the peasants believe that 'if the hens gather on a rising ground, and trim their feathers, it is a sure sign of rain'. And 'if the cock stays on the roost longer in the morning than usual, and crows there, it is a sign of wet'. Dyer, 92-93.—"When they <fowls> look towards the sky, or roost in the daytime, expect rain; but if they dress their feathers during a storm, it is about to cease; while their standing on one leg is considered a sign of cold weather. When fowls collect together, and pick or straighten their feathers, expect a change": Inwards, 133.—If a rooster crows standing on a fence or high place, it is going to be clear.

⁴⁸Compare Ar. 1021; *Geoponica* 1.3.9.

⁴⁹The notion that worms creeping out of the ground indicate rain is still found in the United States. "Worms come forth more abundantly before rain, as do snails, slugs, and almost all limaceous reptiles": Dunwoody, 58.

⁵⁰"Frogs croak more noisily, and come abroad in the evening in large numbers, before rain". "When frogs warble, they herald rain" (Zuni Indians). "The louder the frogs, the more the rain". "The color of a frog changing from yellow to reddish indicates rain". "Tree frogs piping during rain, indicates continued rain": Dunwoody, 72.

⁵¹Mr. Stroh informs me that it was common to see in Germany and Switzerland a small green frog kept in a glass vessel half full of water, with a set of wooden steps leading down into the water; and the weather was supposed to be indicated by the position of the frog. If he remained in the water, fine weather was expected; if he emerged and sat upon the steps, rain and cold were indicated": Inwards, 145.

⁵²*Anthologia Graeca* 1.43.

⁵³Pliny, 18.190, tells of certain plants, which, though growing in fountains, receive their nutriment only from the rains.

⁵⁴The identification of the *δολιγών* has puzzled both ancient and modern scholars. See above, note 18. S. G. Oliphant, 'H *δολιγών*—What was it?', *Transactions of the American Philological Association* 47.85-106, decides in favor of the frog.